


# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference A31219J		<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/JP 03/09804	International filing date (day/month/year) 01.08.2003	Priority date (day/month/year) 07.08.2002	
International Patent Classification (IPC) or both national classification and IPC G02B5/30			
Applicant FUJI-PHOTO FILM CO., LTD. et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the opinion</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand  19.02.2004		Date of completion of this report  03.11.2004	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer  Thieme, W  Telephone No. +49 89 2399-2597	



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/JP 03/09804

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-89 as originally filed

**Claims, Numbers**

1-14 as originally filed

**Drawings, Sheets**

1/11-11/11 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	1-14
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-14
Industrial applicability (IA)	Yes: Claims	1-14
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. The present application does not meet the criteria of Article 33(1) PCT, because the retarder of claim 1 does not involve an inventive step within the meaning of Article 33(3) PCT.
- 1.1 Document D8 (US-A-6 400 433) discloses a retarder (see column 6, line 50 to column 7, line 29; see also figures 4 and 5) comprising
  - \* a substrate (self-evident);
  - \* a first optically anisotropic layer A formed of a composition comprising an aligned LC compound (see column 7, lines 16 to 22) producing a phase difference of  $\pi$  at 550nm (see column 4, lines 49 to 55);
  - \* a second optically anisotropic layer B formed of a composition comprising an aligned LC compound (see column 7, lines 23 to 29) producing a phase difference of  $\pi/2$  at 550nm (see column 4, line 64 to column 7, line 4);
  - \* wherein the in-plane slow axes of layers A and B cross substantially at 60 degrees (see column 4, lines 49 to 55).

As the LC compound, a polymer of rod-like LC molecule can be used (see column 12, lines 21 to 43).

As regards the selection of useful LC molecules, document D8 teaches a basic structure which can be described by

- \* a mesogenic core M;
- \* a plurality of polymerizable groups Q;
- \* spacers A between core M and groups Q for enabling alignment; and
- \* divalent linking groups L for linking spacers to core M and to groups Q.

Applying that teaching to rod-like LC compounds, the most obvious and straightforward structure can be described by

Q1 - L1 - A1 - L3 - M - L4 - A2 - L2 - Q2

wherein Q1, Q2 denotes a polymerizable group, L1, L2, L3, and L4 denote a single bond or a divalent linking group, and A1 and A2 denote a spacer group (see column 12, line 21 to column 23, line 12).

Such LC molecules are well known in the art of producing optical retarders.

Thus, when considered in the light of document D8, the contribution of the item defined in claim 1 to the state of the art presented in document reduces to the restriction that at least either of divalent linking groups L3 and L4 represents -O-CO-O-.

- 1.2 However, the use of such a linking group is also state of the art in the field of liquid crystal compounds used for retarder elements. Document D2 (WO-A-98 00 475), for instance, is related to optical retarder elements and suggests the use of rod-like LC polymers of the above basic structure, in which -O-CO-O- is used as a divalent linking group L3, L4 between spacer groups A1, A2 and the mesogenic core M (see claim 11 and in particular its last paragraph). Nothing inventive can be seen in using such a known LC molecule for producing a known retarder structure.
- 1.3 Therefore, the retarder of claim 1 is considered to evolve in a non-inventive manner from the state of the art.
2. A similar observation applies to the circular polarizer of independent claim 8.
3. The dependent claims do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, the reasons being as follows:

The specific compounds defined in claims 2, 6, 7, 9, 13 and 14 are known from document D2.

The orientation of the longitudinal axis of the substrate to the anisotropic layers defined in claims 3,4,5, 10, 11 and 12 is normal for compensation sheets to be used together with LC displays.